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New species of Afrotropical Neaerini (Diptera: Tachinidae: Goniinae)

by

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ABSTRACT

Ten new species of Afrotropical *Elfia* Robineau-Desvoidy and *Phytomyptera* Rondani are described. *Elfia aristalis* (Villeneuve, 1936) is redescribed. New species are *Elfia aurocrista*, *E. biseta*, *E. clavapalpa*, *E. maurokara*, *E. spinosovirilia*, *Phytomyptera aurantia*, *P. lunata*, *P. mediaposita*, *P. spinacrista* and *P. yemenensis*. Keys are given to all the Afrotropical species of *Elfia* and *Phytomyptera*.

INTRODUCTION

In the Afrotropical Region there are three genera in the tribe Neaerini (Crosskey 1980). *Neoplectops* Malloch stands distinct from the other two genera in having the wing venation complete. The other two genera, *Elfia* Robineau-Desvoidy and *Phytomyptera* Rondani, both have some form of reduced wing venation. In Afrotropical species of *Elfia* the apical section of vein M_1 (from the bend to the wing margin) is missing, while in *Phytomyptera m–cu* is missing as well.

Elfia and *Phytomyptera* species are small to minute (Total body length 2,3–4,2 mm) and must include some of the smallest Afrotropical tachinids. Consequently, members of these two genera have been overlooked by collectors, and it is probable that intensive collecting of small tachinids will lead to the discovery of other new species. This is particularly likely since eight of the ten species occur in southern Africa, but *Phytomyptera*, for example, has a somewhat disjunct distribution, with species from Uganda and Yemen as well.

When Crosskey (1984) prepared keys to Afrotropical genera of Neaerini (key XXI) and Afrotropical Tachinidae with reduced wing venation (key XXXI), *Elfia* was represented by one described species and *Phytomyptera* by two or three undescribed or unrecognised species. With the discovery of five new species in each genus, discrepancies with Crosskey's keys have arisen, although in most cases (and for the majority of species) the keys are still adequate. However, the use of the character 'prosternum setulose' (as a supplementary character in key XXI and a principal character in key XXXI) to separate *Elfia* and *Phytomyptera* from *Neoplectops* (key XXI), and *Elfia aristalis* from *Trichactia* sp. n. and *Lindneriola paradoxa* (key XXXI), should be abandoned. This is because the prosternum may be setulose *or* bare in *Elfia*, and is in fact bare in *aristalis*. A supplementary character used by Crosskey in both keys is that the palps of *Elfia* and *Phytomyptera* are strongly clubbed in the female. Although the palps are apically clubbed in two species known from females, they also vary from being slightly swollen to swollen apically (see descriptions).

MATERIALS AND METHODS

Due to the small size of the specimens the male genitalia were dissected free from the abdomen only after the intact abdomen had been cleared in warm potassium hydroxide. After being drawn, the genitalia were stored in glycerine together with the abdomen, in a microvial pinned beneath each specimen.

Wing length was measured from the humeral crossvein to the wing tip. Holotype measurements are given first, with paratype measurements (if different) in parentheses.

Morphological terminology and abbreviations follow Crosskey (1984), except that costa is abbreviated as *C*. In all illustrations of head profile and wing venation, setation is omitted.

Abbreviations for specimen depositories are: BMNH—British Museum (Natural History), London. BRI—Biosystematics Research Institute, Ottawa. NM — Natal Museum, Pietermaritzburg.

TAXONOMY

Elfia Robineau-Desvoidy, 1850

Elfia Robineau-Desvoidy, 1850: 190. Type species: *Actia cingulata* Robineau-Desvoidy, 1830, by designation of Robineau-Desvoidy (1863: 672).

Elfia is a widespread genus occurring in the Afrotropical, Holarctic and Neotropical Regions. In the Afrotropical Region it has been found only in the western Cape Province of South Africa, between Paarl in the south and Springbok in the north. The seasonal incidence of all five species appears to be restricted to early spring (early September to mid-October).

Key to Afrotropical species of *Elfia*

1 Parafacial and anterior half of gena strikingly gold pollinose **aurocrista** sp. n.
— Parafacial and anterior half of gena silver pollinose or without pollinosity . 2

2 Face and facial ridge without pollinosity .... **maurokara** sp. n.
— Face and facial ridge silver pollinose.............................. 3

3 Mid tibia with 2 *ad* .... **biseta** sp. n.
— Mid tibia with 1 *ad* 4

4 Three humeral setae; barette with 1 setula; third antennal segment semicircular in profile (Fig. 15) .... **spinosovirilia** sp. n.
— Two humeral setae; barette bare; third antennal segment parallel-sided in profile (as Fig. 1) 5

5 Genal depth in profile 1,8 times third antennal segment width (Fig. 1); palp moderately swollen apically in female (apical section 2,0 times width of basal section) .... **aristalis** (Villeneuve)
— Genal depth in profile subequal to third antennal segment width (Fig. 9); palp clubbed apically in female (apical section 3,5 times width of stalk) .... **clavapalpa** sp. n.

Elfia aristalis (Villeneuve, 1936)

Figs 1–2

Phytomyzoneura aristalis Villeneuve, 1936: 2–3.
Elfia aristalis; Crosskey, 1980: 851.

Redescription: Based on ♀ holotype.

Head (Fig. 1): Occiput black with silver to brown pollinosity on upper half; interfrontal brown with faint silver pollinosity; parafrontal brown with silver pollinosity; parafacial orange with striking silver pollinosity; facial ridge and face brown with silver pollinosity; gena orange posterior to vibrissal insertion (strongly silver pollinose at certain angles), otherwise brown with silver pollinosity; antenna black, but second and third segments and arista yellow pollinose; palp brown with silver pollinosity; proboscis yellow-brown to brown. Profile as in Fig. 1. Frons at vertex about half head width. Interfrontal width 2,0 times parafrontal width anteriorly, but 3,0–4,0 times parafrontal width posteriorly. Antenna 0,8 times eye height; first segment exposed; third segment 3,0 times second segment length, width 1,8 times genal depth in profile; arista subequal in length to third segment, basal half swollen, second segment about quarter total length. Palp moderately swollen apically, apical section 2,0 times width of basal section. Chaetotaxy: Orbitals missing, but probably 2 proclinates anteriorly and 1 reclinate posteriorly; second antennal segment with numerous setae/setulae on dorsal surface; facial ridge with 3–4 setulae on lower two-fifths.

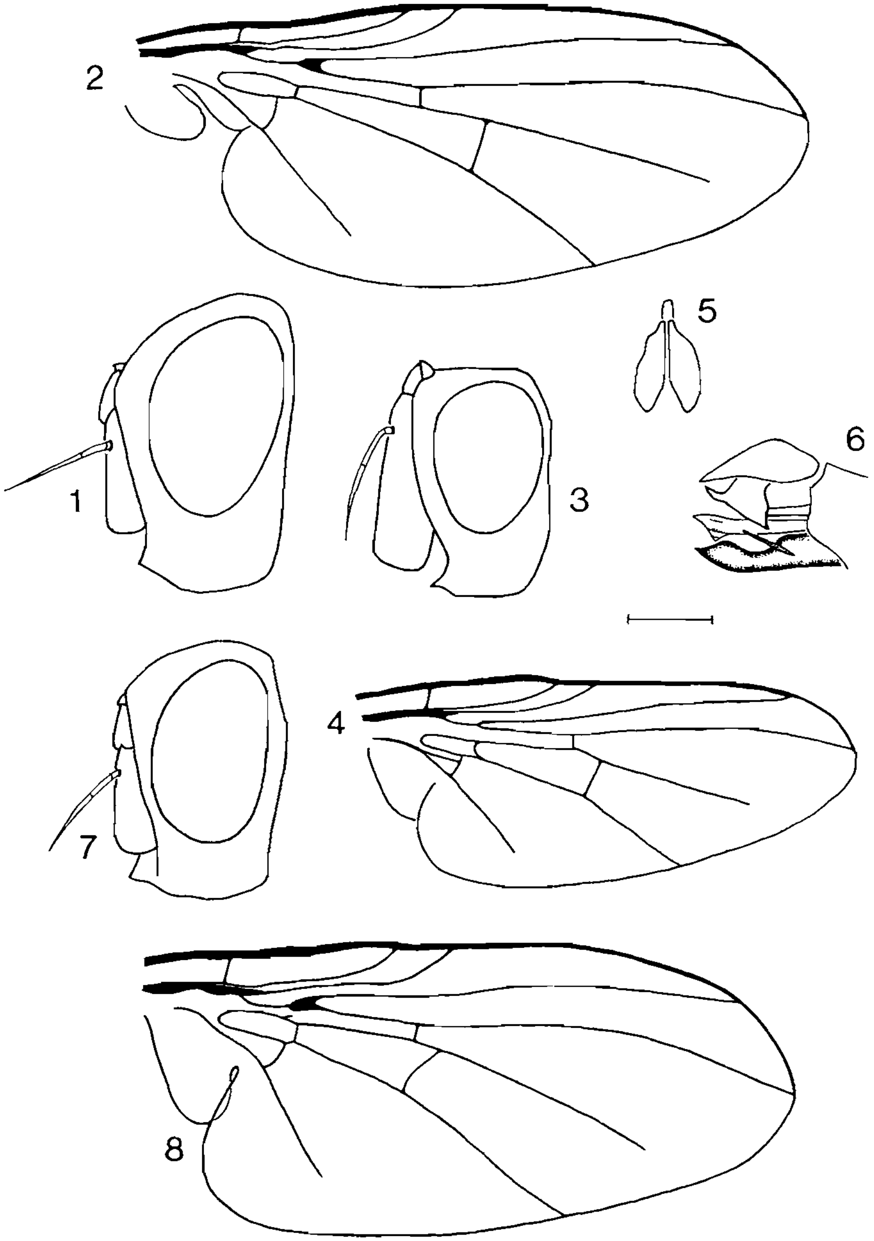
Thorax (Fig. 2): Brown to black with silver pollinosity, but area around prosternum yellow-brown. Chaetotaxy: 2 humerals; 1 posthumeral; pre-alar small, about half length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 4 *acr*; scutellum with convergent basals and (minute) apicals, and cruciate subapicals; prosternum bare; 1 + 1 sternopleurals, 2 setulae inbetween; barette bare. Haltere with yellow-brown stalk and brown knob. Lower calypter with white pollinose surface and white rim. Wing hyaline, basal four-fifths of *C* brown, other veins yellow-brown; basal node of R_{4+5} with setula subequal in length to *r–m*; 2 costal spines (positioned together), half length of *r–m* and subequal in strength to nodal spine; second costal sector bare ventrally. Wing venation as in Fig. 2. Legs brown; setation normal, hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen: Dorsum brown and glossy, pollinosity absent; widest at hind margin of T1 + 2. Six tergites visible in dorsal view; T3 with median marginals barely distinct from other marginal setae; T4 and T5 with marginal setae; T6 covered with setae/setulae.

Measurements: Total length 4,1 mm; wing length 3,0 mm.

Material examined: SOUTH AFRICA: ♀ holotype, S. W. Distr., Cape Province (BRI).

Elfia aristalis is known only from the ♀ holotype; the type locality was not restricted further than the south-western Cape Province. It is distinguished from other Afrotropical species in having the face and facial ridge silver pollinose, the mid-tibia with one *ad*, the barette bare and genal depth in profile greater than the width of the third antennal segment.



Figs 1–8. *Elfia* species. 1–2. *E. aristalis* (Villeneuve, 1936), female holotype. 1. Head profile. 2. Wing venation. 3–6. *E. aurocrista* sp. n. 3. Head profile, male paratype. 4. Wing venation, male paratype. 5–6. Genitalia, male holotype (setation omitted). 5. Cerci and aedeagus, dorsal view. 6. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view. 7–8. *E. biseta* sp. n., female holotype. 7. Head profile. 8. Wing venation. (Scale = 0,1 mm, Figs 5–6.)

Elfia aurocrista sp. n.

Figs 3–6

Derivation: L. *Aurum* = gold; *crista* = ridge. Refers to the gold parafacial.

Description: Based on ♂ holotype, but supplemented with information from ♂ paratypes.

Head (Fig. 3): Occiput black with yellow to brown pollinosity on upper half; interfrontal brown with silver to yellow pollinosity; parafrontal brown to black with yellow to brown pollinosity; parafacial and anterior half of gena strikingly gold pollinose; facial ridge and face glossy brown to black, pollinosity absent; gena (posterior half) brown to black with silver pollinosity; antenna brown to black, but second and third segments and arista yellow pollinose; palp dark brown to black; proboscis brown. Profile as in Fig. 3. Frons at vertex about half head width. Interfrontal width 1,5 times parafrontal width anteriorly, but 2,0 times parafrontal width posteriorly. Antenna 1,3–1,4 times eye height; first segment exposed; third segment 5,0–6,0 times second segment length, width about 0,8 times genal depth in profile; arista three-quarters length of third segment, basal two-thirds swollen, second segment about one-third total length. Palp slightly swollen apically, apical section 1,5 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly (setula sometimes present anterior to these), 1 lateroclinate to reclinate orbital posteriorly; second antennal segment with numerous setulae and 1 distinct seta on dorsal surface; facial ridge with 1 setula on lower sixth.

Thorax (Fig. 4): Brown to black with silver pollinosity laterally and brown pollinosity dorsally, but area around prosternum yellow-brown. Chaetotaxy: 2–3 humerals; 1–2 posthumerals; pre-alar small, about third length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 3 *acr*; scutellum with convergent basals and subapicals, and minute cruciate apicals; prosternum bare or with 1 setula on each side; 1 + 1 sternopleurals, 1–2 setulae inbetween; barette bare. Haltere with yellow-brown stalk and dark brown knob. Lower calypter with white to yellow pollinose surface and yellow to brown rim. Wing hyaline, *C* and sometimes basal node of R_{4+5} dark brown to black, other veins brown; basal node of R_{4+5} with setula subequal in length to *r–m*; 1 costal spine, subequal in length to *r–m* and usually stronger than nodal spine; second costal sector bare ventrally. Wing venation as in Fig. 4. Legs brown to black; setation normal, hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen (Figs 5–6): Dorsum brown with silver pollinosity at certain angles, otherwise glossy; widest at hind margin of T1 + 2. Five tergites visible in dorsal view; T3 with median marginals barely distinct from other marginal setae; T4 and T5 with marginal setae. Cercus and aedeagus as in Figs 5 & 6, anterior paramere without teeth.

Measurements: Total length 2,7 mm; wing length 1,8 mm (2,1 mm).

Material examined: SOUTH AFRICA: 2 ♂, holotype and paratype, Du Toits Kloof, Paarl district, western Cape, 2 000–3 500 ft, 17–28.ix.1959, B. & P. Stuckenberg (NM); 1 ♂ paratype, Pakhuis Pass, 950 m, Clanwilliam district, south-west Cape, 17–19.x.1964, B. & P. Stuckenberg (NM). Natal Museum type number NM 2959.

Elfia aurocrista is easily distinguished from other Afrotropical species in having the parafacial and anterior half of the gena gold pollinose. Although gold pollinosity does not occur in any of the other Afrotropical species, it is not unique in the genus. Thus, for example, the Neotropical species *E. frontalis* (Aldrich) and *E. interrupta* (Aldrich) both have gold pollinosity or colouring on the parafacial and gena, as well as on the interfrontal area, face and facial ridge.

Elfia biseta sp. n.

Figs 7–8

Derivation: L. *Bi* = two; *seta* = bristle. Refers to the two mid-tibial *ad* setae.

Description: Based on unique ♀ holotype.

Head (Fig. 7): Occiput black with sparse silver pollinosity; interfrontal brown with silver pollinosity posteromedially; parafrontal black with silver pollinosity; parafacial yellow-brown with silver pollinosity; facial ridge and face black with silver pollinosity; gena brown to black with silver pollinosity; antenna black, but second and third segments silver pollinose; palp brown with yellow pollinosity; proboscis brown. Profile as in Fig. 7. Frons at vertex about half head width. Interfrontal width 0,8 times parafrontal width anteriorly, but 4,0 times parafrontal width posteriorly. Antenna 0,8 times eye height; first segment exposed; third segment 2,5 times second segment length, width 0,6 times genal depth in profile; arista subequal to length of third segment, basal three-quarters swollen, second segment about quarter total length. Palp slightly swollen apically, apical section 1,5 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 6 setulae along orbital margin between foremost anterior orbital and upper quarter of parafacial; second antennal segment with 1–2 minute setulae (barely visible) and 1 seta on dorsal surface; facial ridge with 2–3 setulae on lower sixth.

Thorax (Fig. 8): Black with silver pollinosity, but scutum and scutellum brown pollinose and area around prosternum yellow-brown. Chaetotaxy: 3 humerals; 1 posthumeral; pre-alar small, about half length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 3 *acr*; scutellum with parallel basals, cruciate subapicals and (minute) apicals; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 2 setulae inbetween; barette with 1 setula. Haltere with yellow stalk and brown knob. Lower calypter with yellow pollinose surface and yellow to brown rim. Wing hyaline, basal three-fifths of *C* brown, other veins yellow-brown; basal node of R_{4+5} with setula about 1,5 times *r–m* length; 1 costal spine, subequal in length to *r–m* and stronger than nodal spine; second costal sector haired ventrally. Wing venation as in Fig. 8. Legs brown to black; mid-tibia with 2 *ad*, hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen: Dorsum black and glossy, pollinosity absent; widest at hind margin of T3. Five tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae.

Measurements: Total length 3,6 mm; wing length 2,8 mm.

Material examined: SOUTH AFRICA: ♀ holotype, Messelpadpas, 25 miles SSW of Springbok, Cape Province, 1 100 ft, 2917Dc, at stream edge, 7.ix.1972, M. E. Irwin (NM). Natal Museum type number NM 2960.

Elfia biseta is distinguished from other Afrotropical species in having two mid-tibial *ad* setae.

Elfia clavapalpa sp. n.

Figs 9–10

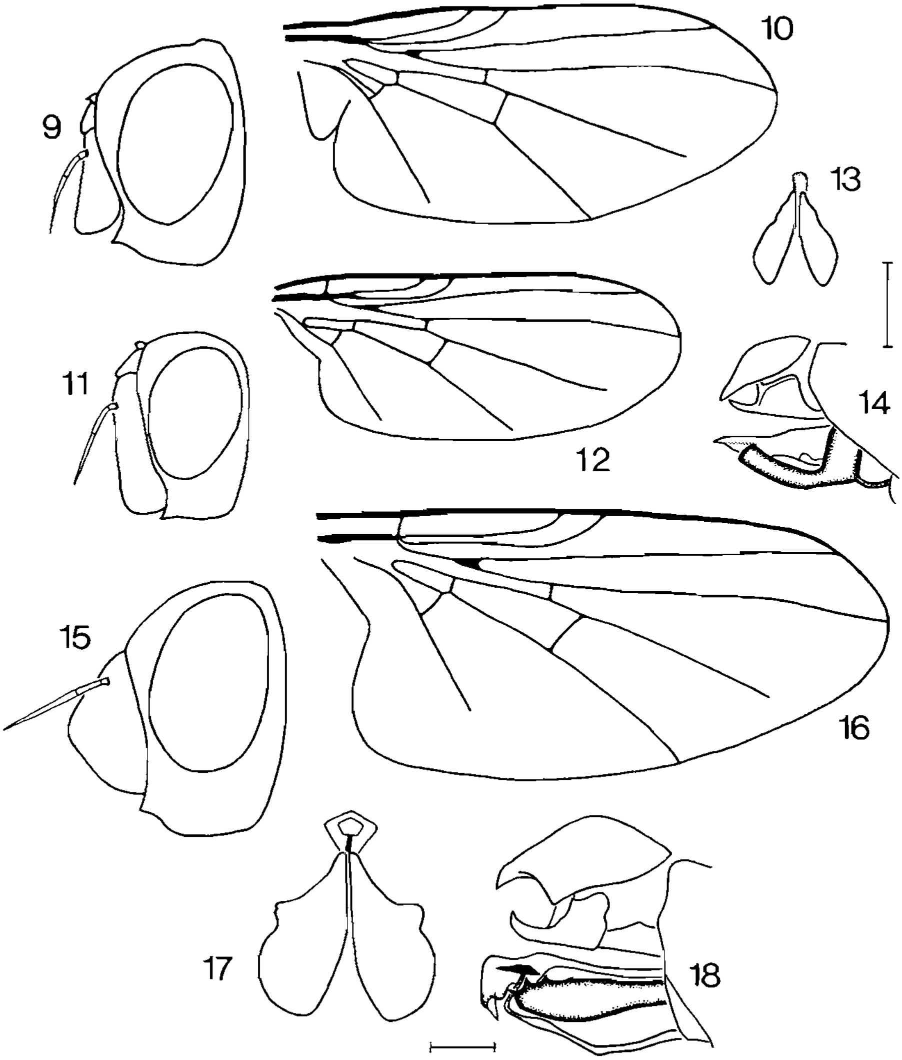
Derivation: L. *Clava* = club; *palpus* = feeler. Refers to the apically clubbed palp.

Description: Based on unique ♀ holotype.

Head (Fig. 9): Occiput black with yellow to brown pollinosity on upper third; interfrontal black with very faint silver pollinosity; parafrontal black with faint silver pollinosity; parafacial black with silver pollinosity visible at certain angles; facial ridge and face brown with silver pollinosity; gena orange-brown posterior to vibrissal insertion, otherwise brown with silver pollinosity; antenna black, but second and third segments and arista yellow pollinose; palp dark brown to black with silver pollinosity; proboscis brown. Profile as in Fig. 9. Frons at vertex about three-sevenths head width. Interfrontal width 2,0 times parafrontal width anteriorly, but 4,0 times parafrontal width posteriorly. Antenna 0,8 times eye height; first segment exposed; third segment 3,5 times second segment length, width subequal to genal depth in profile; arista subequal in length to third antennal segment, basal three-fifths swollen, second segment about quarter total length. Palp clubbed apically, apical section 3,5 times width of stalk. Chaetotaxy: 3 proclinate orbitals anteriorly (anterior one half length and strength of others), 1 lateroclinate orbital posteriorly; second antennal segment with numerous setae/setulae on dorsal surface; facial ridge with 2–3 setulae on lower third to half.

Thorax (Fig. 10): Black with silver to brown pollinosity, but area around prosternum yellow-brown. Chaetotaxy: 2 humerals; 1 posthumeral; pre-alar small, about third length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 3 *acr*; scutellum with convergent basals and subapicals, and minute cruciate apicals; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 1–2 setulae inbetween; barette bare. Haltere with yellow-brown stalk and dark brown knob. Lower calypter with yellow pollinose surface and yellow-brown rim. Wing hyaline, *C* and apical half of R_1 black, other veins brown; basal node of R_{4+5} with setula subequal in length to *r–m*; 1 costal spine, subequal in length to *r–m* and stronger than nodal spine; second costal sector bare ventrally. Wing venation as in Fig. 10. Legs brown to black; setation apparently normal (legs clustered together), hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen: Dorsum dark brown to black with silver to yellow pollinosity; widest at hind margin of T1 + 2. Six tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae; T6 with a few weak setulae towards hind margin.



Figs 9–18. *Elfia* species. 9–10. *E. clavapalpa* sp. n., female holotype. 9. Head profile. 10. Wing venation. 11–14. *E. maurokara* sp. n., male holotype. 11. Head profile. 12. Wing venation. 13. Cerci and aedeagus, dorsal view (setation omitted). 14. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view (setation omitted). 15–18. *E. spinosovirilia* sp. n., male holotype. 15. Head profile. 16. Wing venation. 17. Cerci and aedeagus, dorsal view (setation omitted). 18. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view (setation omitted). (Scales = 0,1 mm, Figs 13–14 & 17–18.)

Measurements: Total length 3,0 mm; wing length 2,2 mm.

Material examined: SOUTH AFRICA: ♀ holotype, Brandkop area, Calvinia district, south-west Cape, 14.x.1964, B. & P. Stuckenberg (NM). Natal Museum type number NM 3000.

Elfia clavapalpa is distinguished from other Afrotropical species in having the face and facial ridge silver pollinose, the mid-tibia with one *ad*, the barette bare and genal depth in profile subequal to the width of the third antennal segment. It is the only species to have apically clubbed palps, but may prove not to be the exception since three species are known from males only.

Elfia maurokara sp. n.

Figs 11–14

Derivation: Gr. *Mauros* = dark; *kara* = head. Refers to the dark colouring of the head.

Description: Based on unique ♂ holotype.

Head (Fig. 11): Occiput black with yellow pollinosity on upper half; interfrontal black with yellow pollinosity; parafrontal black with sparse yellow pollinosity; parafacial brown, pollinosity absent; facial ridge and face brown, pollinosity absent; gena brown to black with yellow pollinosity; antenna black, but second and third segments and arista yellow pollinose; palp dark brown to black; proboscis brown. Profile as in Fig. 11. Frons at vertex about half head width. Interfrontal width subequal to parafrontal width anteriorly, but 5,0 times parafrontal width posteriorly. Antenna about 1,3 times eye height; first segment exposed; third segment 5,0 times second segment length, width subequal to genal depth in profile; arista three-fifths length of third segment, basal five-sixths swollen, second segment about third total length. Palp slightly swollen apically, apical section 1,5 times width of basal section. Chaetotaxy: 3 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 3–4 setulae inbetween proclinate orbitals; second antennal segment with numerous setulae and 1 seta on dorsal surface; facial ridge with 1 setula on lower third.

Thorax (Fig. 12): Brown to black with silver pollinosity laterally and brown pollinosity dorsally, but area around prosternum yellow-brown. Chaetotaxy: 2 humerals; 2 posthumerals; pre-alar small, about half length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 3 *acr*; scutellum with convergent basals, cruciate subapicals and (minute) apicals; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 2 setulae inbetween; barette bare. Haltere with yellow stalk and brown knob. Lower calypter with white to yellow pollinose surface and yellow rim. Wing hyaline, basal four-fifths of *C* brown, other veins yellow-brown; basal node of R_{4+5} with setula about 2,0 times *r–m* length; 1 costal spine, subequal in length to *r–m* and stronger than nodal spine; second costal sector sparsely haired ventrally. Wing venation as in Fig. 12. Legs brown; setation normal, hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen (Figs 13–14): Dorsum dark brown to black and glossy, pollinosity absent; widest at hind margin of T3. Six tergites visible in dorsal view; T3 and T4 with distinct median marginals; T5 with marginal setae; T6 posterior two-thirds covered with setae and setulae. Cercus and aedeagus as in Figs 13 & 14, anterior paramere without teeth.

Measurements: Total length 2,8 mm; wing length 1,8 mm.

Material examined: SOUTH AFRICA: ♂ holotype, Bainskloof, Wellington district, western Cape, 2 000 ft, 4–5.x.1959, B. & P. Stuckenberg (NM). Natal Museum type number NM 2961.

Elfia maurokara is one of two Afrotropical species without pollinosity on the face and facial ridge. The other species is *E. aurocrista*, from which *maurokara* is easily distinguished by having no pollinosity on the parafacial and anterior half of the gena.

Elfia spinosovirilia sp. n.

Figs 15–18

Derivation: L. *Spinosus* = thorny; *virilia* = male genitalia. Refers to the spinulose anterior paramere of the hypopygium.

Description: Based on unique ♂ holotype.

Head (Fig. 15): Occiput black with silver pollinosity; interfrontal brown with yellow pollinosity; parafrontal with anterior third black and posterior two-thirds brown, anterior section yellow pollinose; parafacial silver pollinose; facial ridge and face brown with silver pollinosity; gena yellow-brown to brown with silver pollinosity; antenna brown to black, but second and third segments and arista yellow pollinose; palp yellow-brown to brown with yellow pollinosity; proboscis mostly yellow-brown. Profile as in Fig. 15. Frons at vertex about two-fifths head width. Interfrontal width 0,5 times parafrontal width anteriorly, but 3,0 times parafrontal width posteriorly. Antenna subequal in length to eye height; first segment concealed; third segment 6,0 times second segment length, semicircular in profile, width 1,3 times genal depth in profile; arista about two-thirds length of third antennal segment, basal three-quarters swollen, second segment about quarter total length. Palp slightly swollen apically, apical section 1,5 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 7–9 setulae along orbital margin between posterior orbital and upper quarter of parafacial; second antennal segment with 3–4 setulae and 1 distinct seta on dorsal surface; facial ridge with 1 setula at lowermost end.

Thorax (Fig. 16): Brown to black with silver pollinosity, but area around prosternum yellow-brown. Chaetotaxy: 3 humerals; 2 posthumerals; pre-alar small, about third length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 3 + 3 *acr*; scutellum with convergent basals and subapicals, apicals absent; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 2 setulae inbetween; barette with 1 setula. Haltere with yellow-brown stalk and yellow-brown to brown knob. Lower calypter with white pollinose surface and white rim. Wing hyaline, veins yellow-brown; basal node of R_{4+5} with setula about 2,0 times *r–m* length; 1 costal spine, about two-thirds *r–m* length and stronger than nodal spine; second costal sector sparsely haired to bare ventrally. Wing venation as in Fig. 16. Legs brown to black; setation normal, hind tibia with pre-apical *ad*, *d* and *pd* subequal in length.

Abdomen (Figs 17–18): Dorsum brown and glossy, pollinosity absent; widest at hind margin of T1 + 2 and along margins of T3. Five tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae. Cercus and aedeagus as in Figs 17 & 18, anterior paramere spinulose.

Measurements: Total length 3,6 mm; wing length 2,5 mm.

Material examined: SOUTH AFRICA: ♂ holotype, Bainskloof, Wellington district, western Cape, 2 000 ft, 4–5.x.1959, B. & P. Stuckenberg (NM). Natal Museum type number NM 2962.

Elfia spinosovirilia has a distinctive spinulose anterior paramere. In other Afrotropical species known from males, the anterior paramere is without teeth (*E. aurocrista* and *E. maurokara*); *biseta* differs in having one *ad*, and *aristalis* and *clavapalpa* have three humerals and the barette with a setula.

Phytomyptera Rondani, 1845

Phytomyptera Rondani, 1845: 32. Type species: *Phytomyptera nitidiventris* Rondani, 1845, by monotypy.

Phytomyptera is almost a cosmopolitan genus, the Australasian Region apparently being the only one from which it is currently unrecorded. Its distribution is, however, predominantly Afrotropical-Palaearctic, with about two-thirds of the described species (including those described below) occurring there. Of the five Afrotropical species, three occur in southern Africa, and one each in Uganda and Yemen. *Phytomyptera lacteipennis* is a Palaearctic species ranging as far south as Egypt, but is easily distinguished from all five Afrotropical species in having milky wings. The species occur in a wider range of habitats than *Elfia*: these are littoral, mesic montane and semi-arid.

Key to Afrotropical species of *Phytomyptera*

1 Antenna orange, arista and dorso-apical section of third segment brown to black; first antennal segment concealed; arista swollen along entire length .... **aurantia** sp. n.

— Antenna yellow-brown, brown or black; first antennal segment exposed; arista swollen at most along basal three-quarters 2

2 Facial ridge with setulae along entire height .... **spinacrista** sp. n.

— Facial ridge with setulae at most along lower half...................... 3

3 Abdominal tergites not pollinose; third antennal segment semicircular in profile (Fig. 23) .... **lunata** sp. n.

— Abdominal tergites pollinose, T3 and T4 with silver pollinosity on anterior fifth to third; third antennal segment parallel-sided in profile (as in Fig. 27) 4

4 Male genitalia with anterior paramere's anteroventral aspect shaped as in Fig. 31 .... **mediaposita** sp. n.

— Male genitalia with anterior paramere's anteroventral aspect shaped as in Fig. 38 .... **yemenensis** sp. n.

Phytomyptera aurantia sp. n.

Figs 19–22

Derivation: L. *Aurantium* = orange. Refers to the orange colouring of most of the antenna.

Description: Based on unique ♂ holotype.

Head (Fig. 19): Occiput black with faint silver pollinosity; interfrontal yellow-brown with silver to yellow pollinosity; parafrontal black with silver pollinosity; parafacial silver pollinose; facial ridge and face brown, face with silver pollinosity; gena brown with yellow pollinosity; antenna strikingly orange coloured, but arista and apical sixth/dorso-apical three-fifths of third segment brown to black; palp yellow-brown to orange; proboscis yellow-brown to brown. Profile as in Fig. 19. Frons at vertex about two-fifths head width. Interfrontal width subequal to parafrontal width anteriorly, but 6,0 times parafrontal width posteriorly. Antenna 0,8 times eye height; first segment concealed; third segment 3,0 times second segment length, width about 1,5 times genal depth in profile; arista half length of third segment, markedly swollen along entire length, second segment about two-fifths total length. Palp moderately swollen apically, apical section 2,0 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 4–5 proclinate setulae between anterior proclinate orbital and upper margin of parafacial; second antennal segment with numerous setulae and 1 distinct seta on dorsal surface; facial ridge with 4–5 setulae on lower half.

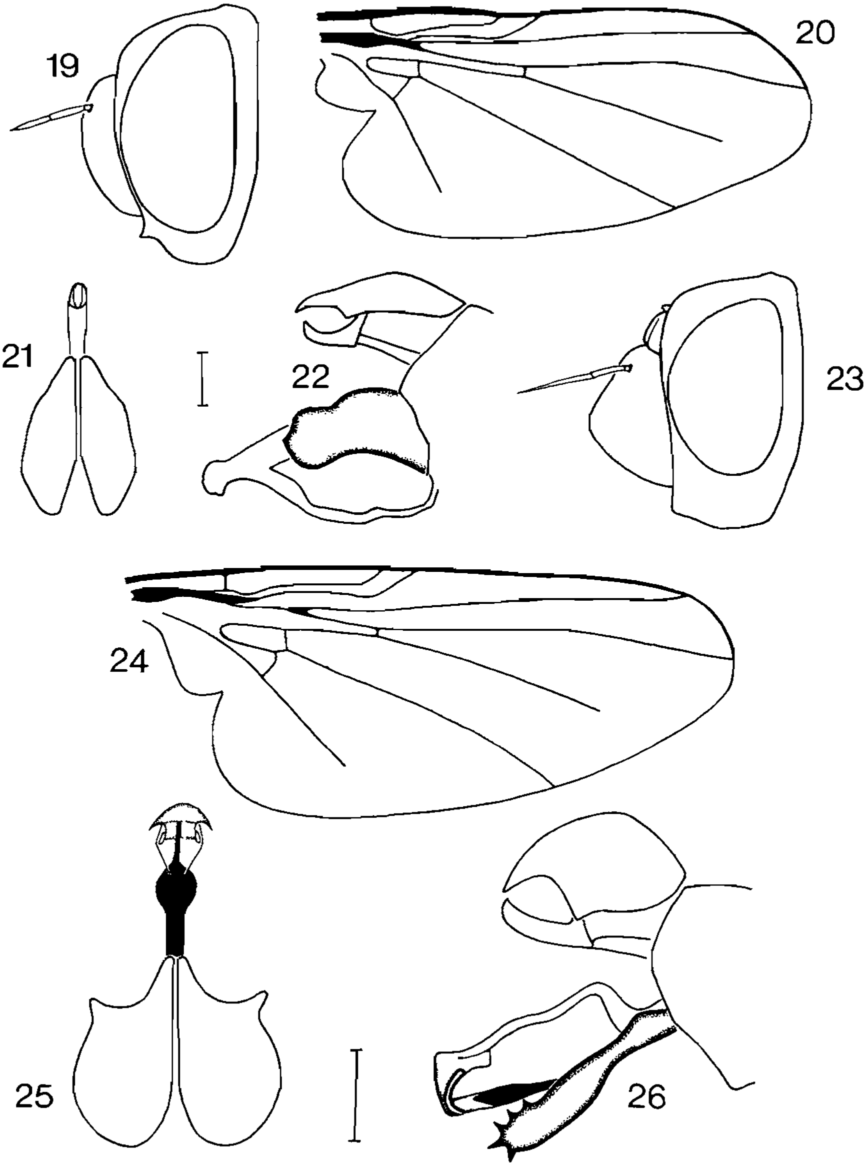
Thorax: (Fig. 20): Black with silver pollinosity. Chaetotaxy: 3 humerals; 2–3 posthumerals; pre-alar small, about two-thirds length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 3 + 3 *acr*; scutellum with convergent basals and cruciate subapicals and apicals (subapicals and apicals missing, configuration suggested by positioning of setal pores); prosternum with 1 setula on each side; 1 + 1 sternopleurals, 2–3 setulae in between; barette with 1 setula. Haltere yellow. Lower calypter with white pollinose suface and white rim. Wing hyaline, *C* (up to junction with R_{2+3}) brown, *Sc*, R_1, R_{2+3}, R_{4+5} and *r–m* yellow-brown, other veins colourless; basal node of R_{4+5} with setula 3,0–4,0 times *r–m* length; second costal sector haired ventrally. Wing venation as in Fig. 20, *r–m* positioned about three-quarters the distance between the junction of *Sc* with *C* and R_1 with *C*. Legs brown to black (2 missing; 4 glued to card next to specimen, unfortunately indistinguishable from each other).

Abdomen (Figs 21–22): Dorsum dark brown and glossy, pollinosity absent; widest at hind margin of T3. Six tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae. Cercus, anterior paramere and aedeagus as in Figs 21 & 22; anterior paramere broad and notched along upper margin, aedeagus knob-like apically, ejaculatory apodeme absent.

Measurements: Total length 3,3 mm; wing length 2,3 mm.

Material examined: SOUTH AFRICA: ♂ holotype, East London, 26.i.1945, G. C. Clark (BMNH).

The holotype is in fairly poor condition (the legs are broken off and the thoracic setation is incomplete), and ordinarily would have been best left undescribed. The



Figs 19–26. *Phytomyptera* species. 19–22. *P. aurantia* sp. n., male holotype. 19. Head profile. 20. Wing venation. 21. Cerci and aedeagus, dorsal view (setation omitted). 22. Cercus, surstylus, anterior paramere (stippled perimeter) and aedeagus, lateral view (setation omitted). 23–26. *P. lunata* sp. n., male holotype. 23. Head profile. 24. Wing venation. 25. Cerci and aedeagus, dorsal view (setation omitted). 26. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view (setation omitted). (Scales = 0,1 mm, Figs 21–22 & 25–26.)

description was justified, however, primarily because of *aurantia*'s unusual antennal characters, which are easily discernable.

Phytomyptera aurantia is easily distinguished from other Afrotropical species in having the antenna almost entirely orange.

Phytomyptera lunata sp. n.

Figs 23–26

Derivation: L. *Lunatus* = shaped like a crescent moon. Refers to the dorsal margin of the third antennal segment, which resembles a crescent margin in profile.

Description: Based on unique ♂ holotype.

Head (Fig. 23): Occiput black with brown pollinosity dorsally and faint silver pollinosity ventrally; interfrontal brown to black with brown pollinosity; parafrontal black with yellow to brown pollinosity; parafacial brown with silver pollinosity; facial ridge and face brown with silver to yellow pollinosity; gena brown to black with silver to yellow pollinosity; antenna brown to black with yellow pollinosity on third segment and arista (densely on third segment, but very sparsely on arista); palp brown; proboscis brown. Profile as in Fig. 23. Frons at vertex slightly less than half head width. Interfrontal width subequal to parafrontal width anteriorly, but 3,0 times parafrontal width posteriorly. Antenna subequal to or slightly longer than eye height; first segment exposed; third segment 4,3 times second segment length, semicircular in profile (dorsal margin resembles crescent margin), width about 1,3 times genal depth in profile; arista about three-quarters length of third segment, basal two-thirds swollen, second segment about third total length. Palp slightly swollen apically, apical section about 1,8 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 7 setulae scattered between anterior proclinate orbital and upper margin of parafacial; second antennal segment with 2 setulae and 1 distinct seta on dorsal surface; facial ridge with 1–2 setulae at lower end.

Thorax (Fig. 24): Black with silver pollinosity, but brown pollinose on scutum. Chaetotaxy: 3 humerals; 2 posthumerals; pre-alar small, about two-thirds length of first *post dc*; 2 *post ia*; 3 + 3 *dc*; 2 + 3 *acr*; scutellum with convergent basals, cruciate subapicals, parallel to divergent apicals and 1 pair discals just anterior to apicals; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 2 strong setulae in between; barette with 1 setula. Haltere with yellow-brown stalk and brown knob. Lower calypter with yellow pollinose surface and yellow-brown to brown rim. Wing hyaline, veins yellow-brown to brown; basal node of R_{4+5} with setula 2,0 times *r–m* length; second costal sector not visible in ventral view, but probably haired. Wing venation as in Fig. 24, *r–m* positioned about coincident with junction between *Sc* and *C*. Legs brown to black; setation normal, hind tibia *ad* three-quarters length of *d* and *pd*.

Abdomen (Figs 25–26): Dorsum dark brown and glossy, pollinosity absent; widest at hind margin of T3. Six tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae. Cercus, anterior paramere and aedeagus as in Figs 25 & 26; anterior paramere narrow but broader apically with 4–5 spinelike projections, aedeagus knob-like anteriorly although a filamentous projection curves downwards from the anterior extremity, ejaculatory apodeme absent.

Measurements: Total length 3,6 mm; wing length 2,5 mm.

Material examined: ZIMBABWE: ♂ holotype, Umtali, Vumba, v.1932, A. Mackie (BMNH).

Phytomyptera lunata has a distinctive spinulose anterior paramere. In other Afrotropical species known from males, the anterior paramere is without teeth. *Phytomyptera spinacrista* is the only species known from a female only, but is easily distinguished from *lunata* in having setulae along the entire height of the facial ridge.

Phytomyptera mediaposita sp. n.

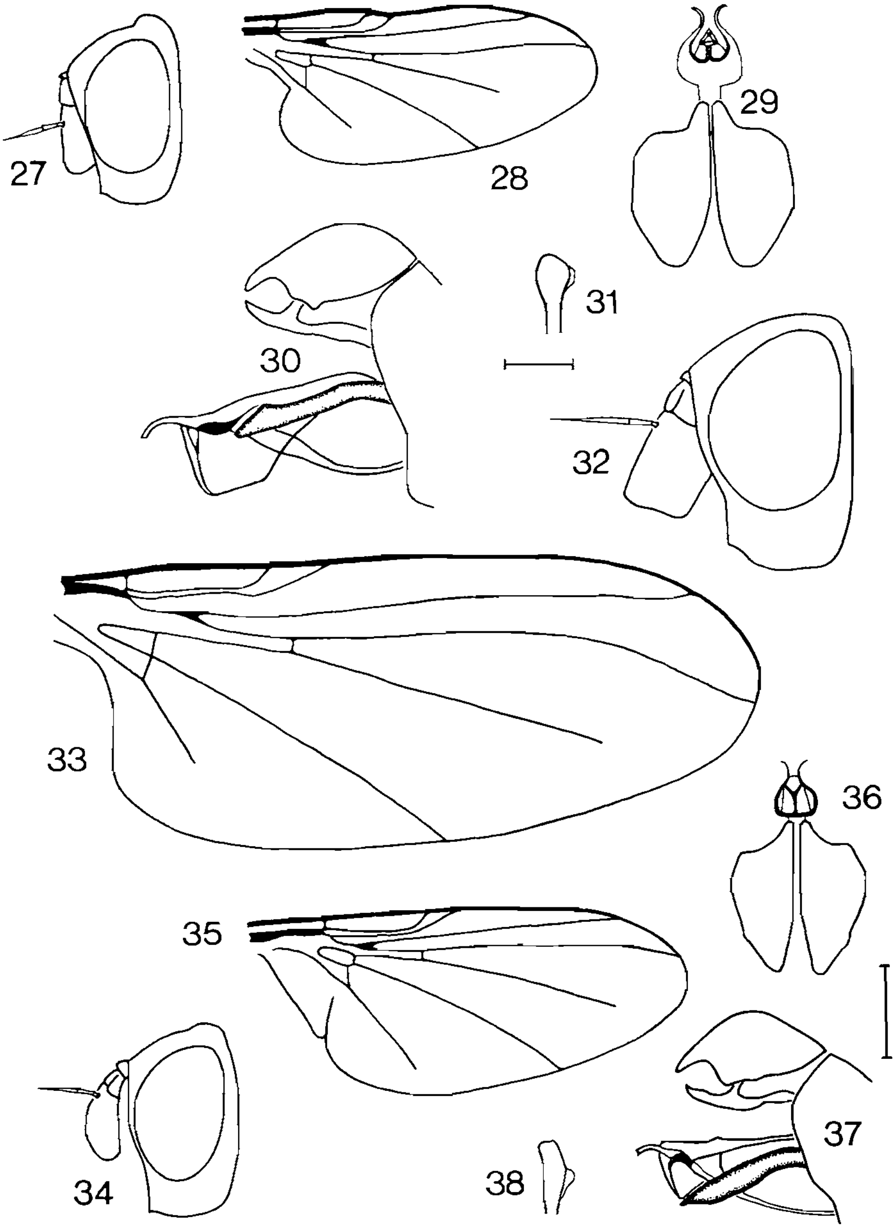
Figs 27–31

Derivation: L. *Medius* = middle; *positus* = placed, situated. Refers to the position of the *r–m* crossvein midway between the junctions of *Sc* with *C* and R_1 with *C*.

Description: Based on ♂ holotype, but supplemented with information from ♂ paratype.

Head (Fig. 27): Occiput black with silver pollinosity; interfrontal yellow-brown with faint silver pollinosity; parafrontal black with silver pollinosity; parafacial brown with faint silver pollinosity; facial ridge and face silver pollinose (black with faint silver pollinosity in paratype); gena orange posterior to vibrissal insertion, otherwise brown to black with silver pollinosity; antenna brown to black with silver pollinosity on second and third segments and sparsely on arista; palp yellow-brown to orange; proboscis yellow-brown to brown. Profile as in Fig. 27. Frons at vertex about two-fifths head width. Interfrontal width 0,8 times parafrontal width anteriorly, but 2,0–3,0 times parafrontal width posteriorly. Antenna about 0,7 times eye height; first segment exposed; third segment 3,0 times second segment length, width subequal to genal depth in profile; arista subequal in length to third segment (four-fifths third segment length in paratype), basal three-fifths swollen, second segment about quarter total length. Palp slightly swollen apically, apical section about 1,3 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate to reclinate orbital posteriorly, 2–3 minute proclinate setulae between anterior proclinate orbital and upper margin of parafacial; second antennal segment with numerous setulae and 1 distinct seta on dorsal surface; facial ridge with 1 setula at lower end.

Thorax (Fig. 28): Brown to black with silver pollinosity, but pollinosity partly gold dorsally at certain angles. Chaetotaxy: 3 humerals; 2–3 posthumerals; pre-alar small, about two-thirds length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 2 + 3 *acr*; scutellum with convergent basals, convergent to cruciate subapicals and cruciate apicals; prosternum with 1 setula on each side; 1 + 1 sternopleurals, setulae absent; barette with 1 setula. Haltere yellow. Lower calypter with white pollinose surface and white to yellow rim. Wing hyaline, veins yellow-brown (apical halves of *M* and Cu_1 pale in paratype); basal node of R_{4+5} with setula 2,0–3,0 times *r–m* length; second costal sector haired ventrally. Wing venation as in Fig. 28, *r–m* positioned



Figs 27–37. *Phytomyptera* species. 27–31. *P. mediaposita* sp. n., male holotype. 27. Head profile. 28. Wing venation. 29. Cerci and aedeagus, dorsal view (setation omitted). 30. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view (setation omitted). 31. Anterior paramere, anteroventral aspect. 32–33. *P. spinacrista* sp. n., female holotype. 32. Head profile. 33. Wing venation. 34–37. *P. yemenensis* sp. n., male holotype. 34. Head profile. 35. Wing venation. 36. Cerci and aedeagus, dorsal view (setation omitted). 37. Cercus, surstylus, aedeagus and anterior paramere (stippled perimeter), lateral view (setation omitted). 38. Anterior paramere, anteroventral aspect. (Scales = 0,1 m., Figs 30–32 & 36–38.)

about half the distance between the junction of *Sc* with *C* and R_1 with *C*. Legs brown to black; setation normal, hind tibia *ad* two-thirds length of *d* and *pd*.

Abdomen (Figs 29–31): Dorsum dark brown to black and glossy, but anterior third of T3 and T4 silver pollinose and tergites very faintly yellow to gold pollinose at certain angles; widest at hind margin of T3 (T1 + 2 in paratype). Five tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae. Cercus, anterior paramere and aedeagus as in Figs 29 & 30; anterior paramere narrow with anteroventral aspect shaped as in Fig. 31, aedeagus filamentous anteriorly, ejaculatory apodeme present.

Female paratype: Differs from the ♂ holotype and paratype in having the following characters: second antennal segment yellow-brown, third segment yellow-brown basally and along inner ventral two-fifths; interfrontal 0,5 times parafrontal width anteriorly; third antennal segment 2,0 times second segment length; arista with second segment about third total length; palp moderately swollen apically, apical section almost 2,0 times width of basal section; scutellar apicals parallel; sternopleurals with 1 setula; T3 and T4 with anterior fifth to quarter silver pollinose.

Measurements: Total length 2,3 mm (3,1–3,4 mm); wing length 1,6 mm (1,8–2,3 mm).

Material examined: SOUTH AFRICA: ♂ holotype, Knersvlakte north of Vanrhynsdorp, south-west Cape, 6–9.x.1964, B. & P. Stuckenberg (NM); 1 ♀ paratype, 11 miles NNE Hondeklipbaai, 3017 Ab, 200 ft, shrubs & reddish sand, 8.ix.1972, M. E. & B. J. Irwin (NM). NAMIBIA: 1 ♂ paratype, Ameib Farm, 19 miles NW Karibib, 31.i–2.ii.1972, B. M. 1972 southern African expedition (BMNH). Natal Museum type number NM 3001.

Phytomyptera mediaposita and *P. yemenensis* are the only Afrotropical species that have bands of pollinosity on any of the abdominal tergites. Despite the great distance between the type localities of these two species (south-western Africa and Yemen respectively) they are very closely related, and are distinguished only by the shape of the anterior paramere's anteroventral aspect.

Phytomyptera spinacrista sp. n.

Figs 32–33

Derivation: L. *Spina* = thorn; *crista* = crest, ridge. Refers to the facial ridge which is setulose along its entire height.

Description: Based on unique ♀ holotype.

Head (Fig. 32): Occiput black with silver to brown pollinosity; interfrontal brown, pollinosity absent; parafrontal black with silver pollinosity; parafacial brown with silver pollinosity; facial ridge and face silver pollinose; gena brown to black with silver polinosity; antenna brown to black with yellow pollinosity on third segment and arista (densely on third segment, but very sparsely on arista); palp yellow-brown; proboscis brown. Profile as in Fig. 32. Frons at vertex just less than half head width. Interfrontal width about 2,0 times parafrontal width anteriorly, but 5,0–6,0 times parafrontal width posteriorly. Antenna about 0,7 times eye height;

first segment exposed; third segment 3,0 times second segment length, very broadly oblong in profile, width subequal to genal depth in profile; arista about 1,2 times length of third segment, basal three-quarters swollen, second segment about quarter total length. Palp slightly swollen apically, apical section about 1,3 times wider than basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 5–6 setulae scattered between anterior proclinate orbital and setulae at upper extreme of facial ridge; second antennal segment with numerous setulae and 1 distinct seta on dorsal surface; facial ridge with setulae along entire height.

Thorax (Fig. 33): Brown to black with silver pollinosity laterally and yellow to brown pollinosity dorsally. Chaetotaxy: 3 humerals; 1–2 posthumerals; pre-alar small, about half length of first *post dc*; 2 *post ia*; 2 + 3 *dc*; 3 + 3 *acr*; scutellum with convergent basals and apicals, subapicals cruciate; prosternum with 1 setula on each side; 1 + 1 sternopleurals, 1–2 minute setulae inbetween; barette with 1 setula. Haltere brown. Lower calypter with white to yellow pollinose surface and yellow rim. Wing hyaline, veins yellow-brown to brown; basal node of R_{4+5} with setula 5,0–6,0 times *r–m* length; second costal sector not visible in ventral view, but probably haired. Wing venation as in Fig. 33, *r–m* positioned about three-fifths the distance between the junction of *Sc* with *C* and R_1 with *C*. Legs brown to black; setation normal, hind tibia *ad* two-thirds length of *d* and *pd*.

Abdomen: Dorsum dark brown and glossy, pollinosity absent; widest at hind margin of T1 + 2. Five tergites visible; T3 with distinct median marginals; T4 with marginal setae; T5 with discal setal row and marginal setae.

Measurements: Total length 4,2 mm; wing length 2,8 mm.

Material examined: UGANDA: ♀ holotype, Mahoma River, Ruwenzori Range, 6 700 ft, 13–16.viii.1952, D. S. Fletcher (BMNH).

Phytomyptera spinacrista is easily distinguished from other Afrotropical species in having setulae along the entire height of the facial ridge. In other species setulae occur at most along the lower half of the facial ridge.

Phytomyptera yemenensis sp. n.

Figs 34–38

Derivation: Named for Yemen, the country in which the holotype was collected.

Description: Based on unique ♂ holotype.

Head (Fig. 34): Occiput black with silver pollinosity; interfrontal yellow-brown with silver pollinosity; parafrontal black with silver pollinosity; parafacial yellow-brown with faint silver pollinosity; facial ridge and face brown to black with faint silver pollinosity; gena brown to black with silver pollinosity; antenna brown to black with yellow pollinosity on third segment; palp yellow-brown; proboscis brown. Profile as in Fig. 34. Frons at vertex just less than half head width. Interfrontal width about 0,5 times parafrontal width anteriorly, but 4,0 times parafrontal width posteriorly. Antenna about 0,6 times eye height (right antenna missing, third segment of left antenna badly damaged); first segment exposed; third segment about 3,0 times second segment length, width about 0,8 times genal depth in profile; arista about three-quarters length of third segment, basal two-thirds swollen, second segment about quarter total length. Palp swollen apically, apical section about 2,5 times width of basal section. Chaetotaxy: 2 proclinate orbitals anteriorly, 1 lateroclinate orbital posteriorly, 3 proclinate setulae between anterior proclinate orbital and upper margin of parafacial; second antennal segment with 2 setulae and 1 distinct seta on dorsal surface; facial ridge with 1 setula at lower end.

Thorax (Fig. 35): Brown to black with silver pollinosity. Chaetotaxy: 3 humerals; 1–2 posthumerals; pre-alar small, about half length of first *post dc*; 2–3 *post ia*; 2 + 3 *dc*; 3 + 3 *acr*; scutellum with convergent basals and cruciate subapicals and apicals (apicals missing, configuration suggested by positioning of setal pores); prosternum with 1 setula on each side; 1 + 1 sternopleurals, 1–3 setulae in between; barette with 1 setula. Haltere yellow. Lower calypter with white to yellow pollinose surface and white to yellow rim. Wing hyaline, veins yellow-brown to brown; basal node of R_{4+5} with setula 1,5 times *r–m* length; second costal sector haired ventrally. Wing venation as in Fig. 35, *r–m* positioned just basad of junction of *Sc* with *C*. Legs brown; setation apparently normal (hind legs missing).

Abdomen (Figs 36–38): Dorsum dark brown and glossy, but anterior quarter to third of T3 and T4 silver pollinose and tergites very faintly silver pollinose at certain angles; widest at hind margin of T1 + 2. Five tergites visible in dorsal view; T3 with distinct median marginals; T4 and T5 with marginal setae. Cercus, anterior paramere and aedeagus as in Figs 36 & 37; anterior paramere narrow with anteroventral aspect shaped as in Fig. 38, aedeagus filamentous anteriorly, ejaculatory apodeme present.

Measurements: Total length 3,3 mm; wing length 2,1 mm.

Material examined: YEMEN: ♂ holotype, Usaifira, 1 mile N. Ta'izz, *ca.* 4 500 ft, 21.xii.1937, H. Scott & E. B. Britton, B. M. expedition to SW Arabia (BMNH).

Unidentified females

The following five females (from five different localities) do not have any distinctive specific characters and could not be reliably associated with males of *Phytomyptera* described in this paper. The palp varies from being swollen apically (apical section 2,5 times width of basal section) to clubbed apically (apical section 3,5–4,0 times width of stalk).

Material examined: MALAŴI: Chikangawa, Viphya Mtns, 1133Dd, Forest edge & grassland, 5–8.xii.1980, Stuckenberg & Londt (NM). NAMIBIA: Aus., 1–2.ii.1929, R. E. Turner (BMNH). SOUTH AFRICA: Tugela Gorge, Mont-aux-Sources, Natal, 4.i.1983, B. R. Stuckenberg (NM); Otterford Forestry Reserve, Hankey area, 3325CC, 1–10.xii.1967, B. & P. Stuckenberg (NM); Graaff-Reinet, Cape Province, x.1931, A. Mackie (BMNH).

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